AMENDMENTS TO THE DRAWINGS

Substitute replacement drawings for all of the drawing figures, with these drawings being shown on the attached replacement pages.

REMARKS

The comments of the Examiner in his Office of Action dated December 30, 2004, concerning his objection to the drawings and specification, and his rejection of claims 1-20 based on 35 USC 112 (first and second paragraphs), and 103(a) have been given consideration by the Applicant and, in view of those comments, Applicant submits the foregoing amendments as placing the claims in condition for allowance and requests favorable consideration of the amended claims.

Turning first to the drawings, a completely new set of drawings is submitted which better disclose the invention has set forth in the specification. Some of the difficulties encountered responding to previous Office Actions were caused by the drawings originally submitted with the application which at times were inaccurate or hard to understand, despite the wording of the specification. Some of the lines which have been deleted did not correspond to any reference numerals and their inclusion at times appeared to be contrary to the actual wording of the application as filed. The drawings now submitted are submitted as being acceptable, and as obviating the objection to the drawing figures.

With respect to the specification, a further amendment has been made to paragraph [0024], based on the typographical error discovered by the Examiner in the present Office Action. Therefore, as amended, Applicant submits that the objections to the specification have been satisfied.

Turning now to the rejections under Section 112, first paragraph, claims 17-20 were rejected due in part to problems with the original drawings. However, the substitute drawing figures better show the open ends of the shaft which the Examiner notes in enumerated paragraph 7 of his Office Action appear in the written description of the shaft in the application as originally filed. Thus, Applicant submits that the rejection under Section 112, first paragraph, referenced in enumerated paragraph 7 has been satisfied.

Claims 8 and 13-16 were also rejected based on Section 112, first paragraph. Based upon the attached declaration of Applicant concerning inter alia the ordinary level of skill in the art of the winding of casings and an additional reference concerning geodesic isotensoids, it is submitted that one of ordinary skill in the art would find the specification enabling. Therefore, as the declaration makes clear, undue experimentation would not be required to make and/or use the claimed invention, despite the numerous parameters involved. Thus Applicant submits that the rejection of claims 8 and 13-16 referenced in enumerated paragraph 8 of the Office Action has been satisfied.

Claims 8 and 13-16 were also rejected based on Section 112, second paragraph, as being indefinite. As Applicant's Declaration plainly sets forth, the relationship disclosed in his application would not be considered indefinite or vague by one of ordinary skill in the art. As such, Applicant submits that the rejection of claims 3, 14, and 19 under Section 112, second paragraph, should be withdrawn.

Turning now to the Section 103 rejection of claims 1-20 based on Kreft in view of Williams ('978), the Examiner states that Kreft shows a shaft for the transmission of torsional loads, the shaft comprising: an elongated inner tube member 5 having opposed open ends; at least one end piece 3; a composite material covering the inner tube member 5 and a convexly curved portion of end piece 3. According to the Examiner, torque is transmitted directly from the inner tube member 5 to the end piece 3 via the clamping ring 2, and indirectly from the inner tube member 5 through the composite material to the end piece 3. Figure 3 is stated as showing a sacrificial layer 6b. The Examiner states that the angle of twist at failure of the inner tube member 5 and the composite material are the same because they both comprise the same materials of construction.

According to the Examiner, Fig. 2b of Kreft shows all the fibers oriented at a singe angle, with a portion of the end piece 3 covered with the composite material defining a geodesic isotensoid elliptical shape derived with reference to the angle of the fibers (to the same extent that Applicant's Fig. 5 shows the portion 20 of the end piece 14 covered with the composite material 18 defines a geodesic isotensoid elliptical shape derived with reference to the angle of the fibers). The Examiner also states that the shaft in Kreft can be limited to speeds below the first natural frequency of the shaft and to operating loads below maximum operating strength.

The Examiner admits that Kreft does not show the end piece 3 as including a knurled exterior where it is connected to the composite material, but argues that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the shaft of Kreft

by including a knurled exterior on the end piece in order to provide a strong interlock that will not easily break between the end piece and the composite material because Williams ('978) teaches including a knurled exterior 18 on an end piece 12 where it is connected to a composite material 24 in order to provide a strong interlock that will not easily break between the end piece and the composite material.

With respect to claims 17-20, while neither Kreft nor Williams ('978) shows a shaft having a open end at both ends of the shaft. However, the Examiner's position is that it would have been obvious to modify the combination of Kreft and Williams ('978) so that the shaft would have open ends for one or both of the following reasons: (1) it would have been an obvious matter of design choice since such a modification would have involved a mere change in the shape of the end piece 3, citing to In re Dailey, 149 USPQ 47 (CCPA 1966) for the proposition that a change in shape is generally recognized as being within the level of ordinary skill in the art and/or (2) Applicant has not disclosed that providing the shaft with opened ends solves any problem or is for any particular purpose.

First of all, as Applicant's Declaration makes clear, Kreft emphatically does not disclose a geodesic isotensoid winding. Kreft teaches strength by winding in a plurality of directions in a plurality of layers. There is no teaching or suggestion concerning geodesic isotensoid winding, rather Kreft teaches away from such winding. Lacking any motivation to use geodesic isotensoid winding, since the winding of Kreft works for its intended purpose, there is no reason to change to a completely different type of winding as taught by Applicant. Thus the winding of

Applicant's invention in the manner described by Applicant is not obvious based on Kreft combined with Williams.

As far as it being obvious to combine Williams with Kreft because of Williams teaching about a knurled exterior is contrary to the express teaching of Kreft that the end cap covers the wound end of the shaft, with the end cap being retained in place by locking ring 4. Applicant's invention claims the winding covers the end cap, not the reverse as taught by Kreft. Thus, combining Kreft with Williams would result in a shaft with the end cap covering the winding, instead of the relationship claimed by Applicant. Due to the geodesic isotensoid winding of Applicant's shaft, a locking ring is not needed. Similarly, Williams '978 does not disclose geodesic isotensoid winding, such that the knurl only serves to assist in the retention of the ends of the winding as shown in comparing Figs. 1 and 4 of Williams, as opposed to the elongate fibers of Applicant's invention which come into contact with the knurling as the winding is done in a geodesic isotensoid manner as shown in Applicant's Fig. 4A. Thus upon closer examination, the supposed combination would not result in Applicant's device, and is contrary to the teachings of both Kreft and Williams. No one of ordinary skill in the art would attempt to make the combination and result in Applicant's device, absent complete redesign or reliance on hindsight, both of which are impermissible according to the Federal Circuit.

With respect to the Dailey case cited by the Examiner, Applicant submits that a closer reading of the case results in the conclusion that it is inapplicable to the instant situation. The

case involved a disposable nursing container for infants. Dailey claimed the shape of the top and bottom of his invention was less than a hemisphere, while the cited art showed a top and bottom that were closer to half an egg in shape. The CCPA thus held that the configuration of the container i.e. less than a hemisphere was a mere matter of choice. However, the difference between what Applicant discloses and what the Examiner says that Kreft and Williams disclose is not a mere change in configuration, it is a complete change in the structure of the cited shafts. Thus, the reliance on Dailey is submitted as being misplaced, since the factual situation here is completely different.

Moreover, as opposed to the prior art such as Kreft and Williams, Applicant's Declaration and the attachments thereto make it clear that Applicant's shaft performs much better than those in the prior art. Thus, the shaft as claimed performs in a superior manner such that the conclusion that its structure would have been obvious must fail. Applicant's claimed invention is not obvious, it is patentable.

In view of the amendments to the drawings, specification and claims, and the foregoing remarks, claims 1-20 are submitted for further consideration as being patentable. The allowance of these claims is respectfully solicited. If the Examiner has any questions which would expedite issuance of a Notice of Allowance, a telephone call to the undersigned is requested during normal working hours.

Serial No. 10/038,946
Docket No. BUJ 005 P2

The Commissioner is authorized to charge Deposit Account No. 13-3393 for any insufficient fees under 37 CFR §§ 1.16 or 1.17, or credit any overpayment of fees.

Respectfully submitted,

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May 31, 2005 (Tuesday following Memorial Day)

Enclosures - Petition for 3 month extension of time;
Declaration of Jerald S. Burkett and attachments
Glossary pages from Composites
Pages 510-511 from Composites
E-mail from Honda Racing Team
Top 20 article from Popular Hot Rodding Magazine
Substitute drawing sheets (6); and
Fee transmittal form and check for $510